PIVOT TABLE 101



WHY PIVOT TABLES?

	A	В	С	D
1	State -	Year 👻	Total Population 👻	Student Population 💌
2	New Mexico	2002	1,903,289	310,117
3	Nebraska	2003	1,826,341	313,968
4	Maryland	2004	5,884,563	359,210
5	California	2003	37,253,956	8,965,848
6	Montana	2002	926,865	163,067
7	D.C.	2004	917,092	183,811
8	Alaska	2002	655,435	153,920
9	Minnesota	2001	4,919,479	1,195,975
10	Louisiana	2001	4,468,976	626,279
11	Montana	2001	902,195	208,952
12	New Mexico	2004	2,085,538	631,320
13	West Virginia	2004	1,855,413	244,566
14	Louisiana	2004	4,601,893	326,680
15	Arizona	2003	6,329,013	1,837,525
16	Maryland	2001	5,296,486	1,399,498
17	Tennessee	2002	5,900,962	595,648
18	Texas	2002	23,764,231	5,246,483
19	Rhode Island	2003	1,052,567	173,937
20	Utah	2001	2,233,169	388,385
21	Wisconsin	2001	5,363,675	1,415,261
22	Kansas	2004	2,885,905	872,769
23	D.C.	2001	783,600	166,161
24	California	2002	35,893,799	3,598,863
25	Ohio	2003	11,536,502	3,361,193
26	Texas	2003	25,145,561	7,561,350
27	Alabama	2002	4,530,182	1,273,375
28	Utah	2002	2,389,039	460,374
29	Virginia	2003	8,001,024	1,445,224

-

Looking at a raw data set like the one here, how would you answer the following?

- 1. Which state had the highest population in 2002?
- 2. In which year was overall US population the highest?
- 3. Which states saw a decline in student population rate between 2003 and 2004?

What if you don't even *know* what you're looking for?



PIVOT TABLE 101

	A	B	C	D			
1	State -	Year -	Total Population -	Student Population 👻			
2	New Mexico	2002	1,903,289	310,117			
3	Nebraska	2003	1,826,341	313,968			
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19	Rhode Island	2003	1,052,567	173,937			
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21	Wisconsin	2001	5,363,675	1,415,261			
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23	D.C.	2001	783,600	166,161			
24	California	2002	35,893,799	3,598,863			
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27	Alabama	2002	4,530,182	1,273,375			
28	Utah	2002	2,389,039	460,374			
29	Virginia	2003	8,001,024	1,445,224			

PivotTables allow you to easily organize, filter, summarize, and analyze raw data

"Analyzing data without a Pivot is like hammering a nail with a noodle"

-Albert Einstein*



	А	В	С	D	E
1	State 🔻	Year 💌	Total Pop	% of State Pop	Student Population %
2	🗏 Alabama		18,579,040	100.00%	19.15%
3		2001	4,447,100	23.94%	21.33%
4		2002	4,530,182	24.38%	28.11%
5		2003	4,779,735	25.73%	10.39%
6		2004	4,822,023	25.95%	17.42%
7	🗏 Alaska		2,724,047	100.00%	12.99%
8		2001	626,932	23.01%	10.72%
9		2002	655,435	24.06%	23.48%
10		2003	710,231	26.07%	7.75%
11		2004	731,449	26.85%	10.63%
12	🗏 Arizona		23,756,734	100.00%	17.32%
13		2001	5,130,632	21.60%	27.22%
14		2002	5,743,834	24.18%	6.10%
15		2003	6,329,013	26.64%	29.03%
16		2004	6,553,255	27.58%	8.09%



KEY BENEFITS



POWERFUL

- Uncover insights and answer key questions about your data



BEAUTIFUL

- Apply custom styles and conditional formatting rules to bring your Pivots to life



FAST

- Create custom views, filters, and calculated fields on the fly



ACCURATE

- Automate calculations to minimize human error



FLEXIBLE

- Manipulate table layouts and create dynamic views in seconds



DATA STRUCTURE

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	Satisfaction	Airline Status	- A	Age Range	Gender	Flight Date	Destination City	Destination State	Type of Travel	Class
ł.	5	Blue	31	30-39	Male	3/18/2014	Dallas/Fort Worth, TX	Texas	Business travel	Business
3	4	Blue	56	50-59	Male	1/11/2014	Dallas/Fort Worth, TX	Texas	Business travel	Business
1	3	Blue	21	20-29	Female	1/25/2014	Dallas/Fort Worth, TX	Texas	Personal Travel	Business
ŝ	4	Blue	43	40-49	Male	2/20/2014	Dallas/Fort Worth, TX	Texas	Business travel	Eco
5	5	Silver	49	40-49	Male	2/25/2014	Dallas/Fort Worth, TX	Texas	Business travel	Eco
1	5	Gold	49	40-49	Female	1/16/2014	Dallas/Fort Worth, TX	Техаз	Business travel	Eco
8	3	Gold	35	30-39	Male	3/6/2014	Dallas/Fort Worth, TX	Техаз	Business travel	Eco
1	4	Silver	33	30-39	Male	2/5/2014	Dallas/Fort Worth, TX	Texas	Business travel	Eco
0	4	Blue	44	40-49	Female	1/21/2014	Dallas/Fort Worth, TX	Texas	Business travel	Eco
1	4	Blue	51	50-59	Female	1/19/2014	Dallas/Fort Worth, TX	Texas	Business travel	Eco
2	4	Blue	28	20-29	Male	3/19/2014	Dallas/Fort Worth, TX	Texas	Business travel	Eco
3	2	Blue	39	30-39	Female	2/4/2014	Dallas/Fort Worth, TX	Texas	Business travel	Eco
4	5	Platinum	46	40-49	Female	1/15/2014	Dallas/Fort Worth, TX	Texas	Business travel	Eco
5	3	Silver	26	20-29	Female	2/5/2014	Dallas/Fort Worth, TX	Texas	Business travel	Eco
6	3	Blue	52	50-59	Female	2/17/2014	Dallas/Fort Worth, TX	Texas	Mileage tickets	Eco
7	3	Blue	46	40-49	Male	1/9/2014	Dallas/Fort Worth, TX	Texas	Mileage tickets	Eco
8	3	Silver	62	60-69	Female	1/4/2014	Dallas/Fort Worth, TX	Texas	Personal Travel	Eco
9	2	Blue	24	20-29	Female	2/9/2014	Dallas/Fort Worth, TX	Texas	Personal Travel	Eco
0	1	Blue	75	70-79	Female	3/8/2014	Dallas/Fort Worth, TX	Texas	Personal Travel	Eco
1	3	Blue	19	0-19	Female	2/16/2014	Dallas/Fort Worth, TX	Texas	Personal Travel	Eco
2	3	Blue	38	30-39	Female	1/19/2014	Dallas/Fort Worth, TX	Texas	Personal Travel	Eco
3	2	Blue	62	60-69	Male	1/24/2014	Dallas/Fort Worth, TX	Texas	Personal Travel	Eco
4	3	Blue	16	0-19	Male	1/15/2014	Dallas/Fort Worth, TX	Texas	Personal Travel	Eco
5	1	Blue	67	60-69	Female	3/6/2014	Dallas/Fort Worth, TX	Texas	Personal Travel	Eco
6	2	Blue	47	40-49	Female	3/29/2014	Dallas/Fort Worth, TX	Texas	Personal Travel	Eco
17	3	Blue	62	60-69	Female	1/21/2014	Dallas/Fort Worth, TX	Texas	Personal Travel	Eco

- Rectangular (variables as columns, observations as rows)
- No extra formatting
- Contains only dimensions & measures
- Clear column headers
- No extra headers, footers, sub-totals or calculated fields

			B	AD)!					G)	P.,					
- 24	А	В		7		D		E		F		G		H		I	
1								MARKETI	NG	DATA							
2		Period1		Period2		Period3		Period4		Period5		Period6		Period7		Period8	
3	Impressions	1,286,	982	2,873,9	987	1,266,	721	1,236,	237	2,122,1	113	2,145	,532	2,516	782	2,981	,727
4	Clicks		627		374		827		263		912		662		723		1283
5	CTR	0.0	049%	0.0	13%	0.0	65%	0.0	21%	0.0	43%	0.0	031%	0.0	029%	0.	043%
6	Column3		79		67		0		88		66		79		95		85
7	Column4		20		6		20		15		12		15		18		17
8	CVR		25%		9%	#DIV/0	1		17%	1	8%		19%		19%		20%
9																	
10				Mo	onth	ly Costs											
11				Jan		\$395											
12				Feb		\$350											
13				Mar		\$206											
14				Apr		\$214											
15				May		\$385											
16				Jun		\$301											
17				Jul		\$263											

- Transposed (variables as rows, observations as columns)
- Unnecessary formatting
- Contains calculated fields
- Confusing column header names
- Extra header rows



INSERTING A PIVOT TABLE

File Home Insert Page Layout Formulas Data wotTable Recommended PivotTables Tables Tables	From the "Insert" I Pivot, or use the <mark>R</mark> browse pre-popula	menu, select ecommend ated starting	PivotTable led PivotTa points	e to create a bla ables option to
		Sum of IMDb Score (1-10	 Sum of IMDb Score (1-10) by Country
		Row Labels - Sum of IMDb Score (1-10)	Row Labels Sum o	f IMDb Score (1-10)
•		Argentina 22.8	Afghanistan	7.4
reate PivotTable	_	Aruba 4.8 Australia 252.2	_ Argentina	22.8
		Belgium 13.4 Brazil 38.8	Aruba	4.8
Choose the data that you want to analyze	2	Canada 391.9 Chile 6.9	Australia	252.2
Select a table or range		Sum of Lead Actor FB Li	Belgium	13.4
Table/Range:	What data are	Row Labels - Sum of Lead Actor FB Likes	Brazil	38.8
O Use an external data source	way analyzing?	Afghanistan 30 Argentina 1995	Canada	391.9
Chaose Connection	you analyzing?	Aruba 635 Australia 207117	Chile	6.9
Choose connection		Belgium 31324 Brazil 2350	China	98.2
Connection name:	2	Canada 230025 Chile 562	Colombia	7.5
Use this workbook's Data Model		Sum of Movie FB Likes	Czech Republic	20.9
Choose where you want the PivotTable report to be placed		Row Labels Sum of Movie F8 Likes Sum of	Denmark	5.1
◎ New Worksheet	Where will the	Afghanistan 0 Argentina 33057	France	7.2
<u>Existing Worksheet</u>	PivotTable live?	Aruba 471 Australia 448828	Georgia	5.6
Location: Sheet2!\$A\$1		Belgium 14000 Brazil 39278	Germany	497.6
		Canada 246425	Hong Kong	89.5
hoose whether you want to analyze multiple tables	-	Sum of IMDb Score (1.10	Hungary	12.9
Add this data to the Data Model		Sum of INDO Score (1-10	Iceland	13.8
		Action 5653.3	▼ India	92.6
OK Cancel		Blank PivotTable Change Source	ce Data	OK Cancel

(Insert → PivotTable)

(Insert → Recommended PivotTables)



THE FIELD LIST





ANALYZE & DESIGN OPTIONS

The "Analyze" Tab:

⊟ 5-∂				P_Excel_Training_Exercis									Christop		
File Home	e Insert Pa	age Layout 🛛 F	ormulas Data	Review View	Developer	Analytics Edge	Power Pivot	Analyze	Design	🖓 Tell m	e what you wan	it to do			β_{+} Share
PivotTable Name: PivotTable2	Active Field: Year	Drill Drill gs Down Up	*∃ Expand Fie	d → Group Selectio	n Insert Slicer 1	Insert Filter	Refresh Chang	ge Data Cl	lear Select	Move PivotTable	Fields, Items, & Sets *	$\int_{f_X} \mathbb{R}$	PivotChart Recommended PivotTables	Field +/- Field List Buttons Headers	
PivotTable		Active Field		Group		Filter	Data		Actio	ns	C	alculations	Tools	Show	~

The "Design" Tab:

•	ה ק ק					MAP_	Excel_Train	ing_Exerc	cises - Excel			PivotTabl	le Tools	
File	Home	Insert	Page	e Layout	Formulas	Data	Review	View	Developer	Analytics Edge	Power Pivot	Analyze	Design	${ig Q}$ Tell me what you want to do
				Row H	eaders	Banded	Rows							
Subtotals *	Grand Totals *	Report Layout - R	Blank Rows -	Colum	n Headers	Banded	Columns							
	Layo	ut			PivotTable St	yle Options				Piv	otTable Styles			



SELECTING, CLEARING & MOVING PIVOTS



Select options (allow you to select entire sections of the PivotTable (or the entire table itself)

Move options allow you to relocate an existing PivotTable to a new worksheet or a new location within the existing one



PRO TIP:

that have been applied

Select \rightarrow Entire PivotTable, then copy and paste to duplicate an entire Pivot



REFRESHING & UPDATING PIVOTS



adjust as new columns or rows are added, or use a column-only range reference (i.e. \$A:\$G) **Change Data Source** allows you refresh the Pivot to reflect changes *outside of* the defined source range or table (i.e. new columns or rows)



HOW DO PIVOTS ACTUALLY WORK?



STEP 1: Detect/evaluate coordinates

State	= Arizona		A	В	С	l.
11000	ura Total Danulation	1	State 🔹	Age 🔹	Total Population	Total Citizen I
weast		2	Alabama	18 to 24	439	428
Filter :	= All ages	3	Alabama	25 to 34	576	535
		4	Alabama	35 to 44	615	582
		5	Alabama	45 to 64	1297	1275
		6	Alabama	65+	667	660
		7	Alaska	18 to 24	63	61
		8	Alaska	25 to 34	109	103
		9	Alaska	35 to 44	86	80
		10	Alaska	45 to 64	186	182
	Excel isolates relevant source data	11	Alaska	65+	72	69
		12	Arizona	18 to 24	586	545
		13	Arizona	25 to 34	859	709
		14	Arizona	35 to 44	870	713
		15	Arizona	45 to 64	1656	1502
		16	Arizona	65+	892	846
		17	Arkansas	18 to 24	288	281
		18	Arkansas	25 to 34	362	336

STEP 2: Apply arithmetic

• Summarize Values By: AVERAGE

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•

.

• (vs. SUM, COUNT, MAX, MIN, etc.)

STEP 3: Display result

• (586+859+870+1656+892)/5 = **973**



NOTE: You can **double-click** any specific value in a Pivot to generate a new tab showing the exact source data used to calculate it



PIVOT FORMATTING



NUMBER FORMATTING



Right-click a column header or any individual value within a field to change the number format (*number, currency, percentage, date, etc.*)

Number A	lignment	Font	Border	Fill	Protection	
Category: General Number Currency Accounting Date Time Percentage Fraction Scientific Text Special Custom		Samp PG Genera	ole al format cells l	have no spe	cific number format.	



PRO TIP:

Right click, select PivotTable Options, and select the "Layout & Format" tab to customize how you want to display blank or error values



TABLE STYLES

	ສຳ ∂ຳ	÷			Excel_P	ivotTable_E	xercises_W	IP_v2 - Excel		PivotTable Tools				
I	ile Home	Inser	t Page Layout	Formulas	Data	Review	View	Developer	Analytics Edg	ge Power	Pivot Ar	nalyze	Design	🖓 Tell m
Sub	totals Grand • Totals • L Layout	Report ayout *	Blank Rows *	r Headers ↓ Weaders ↓ Weaders ↓ PivotTable Style	Bandeo Bandeo Options	1 Rows 1 Columns	Custom							•
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	А		E	3		С								
1	Age		(All)	-]		====	= ====		=====				
2	State	-	Average of Tot	al Population										
4	Alabama			719				-		Isses			== =	
5	Alaska			103				-						
6	Arizona			973										
7	Arkansas			440										
8	California			5,672			8888							
10	Connecticut			703				-						
11	Delaware			139										
12	District Of Col	umbia		103				=						/
13	Florida			3,007			Medium							
14	Georgia			1,436								_		
15	Hawaii			202										
16	Idaho			226										
17	Illinois			1,930							/			
18	Indiana			971			1						==	
19	lowa			464										
20	Kansas			424										
21	Kentucky			658		_								
22	Louisiana			664			🛃 New	PivotTable St	/le					
23	Maine			208			Clea	r						
24	Maryland			890										
0.0														

Select from a range of styles (right-click to make default), or customize your own:

Table Element		Drawiew
Vehicle Table Report Filter Labels Report Filter Values First Column Stripe Second Roumn Stripe First Row Stripe First Row Stripe Hirst Column Header Row	*	
Element Formating:		



TABLE LAYOUTS: COMPACT VS. OUTLINE

Compact Form (*default*):

	A			В
1	Order Priority		(All)	-
2	Region		(All)	-
3				
4	Row Labels	įΨ.	Sum of Ord	der Quantity
5	🗏 Furniture			4,563
6	🗏 Bookcases			1,347
7	O'Sullivan 3-Shelf Heavy-Duty Bookcases			500
8	Bush Mission Pointe Library			442
9	O'Sullivan Elevations Bookcase, Cherry Finish			405
10	🖃 Chairs & Chairmats			1,674
11	Global High-Back Leather Tilter, Burgundy			666
12	Global Troy™ Executive Leather Low-Back Tilter			550
13	Office Star - Mid Back Dual function Ergonomic High Back Ch	nair		458
14	🖃 Tables			1,542
15	Bevis 36 x 72 Conference Tables			619
16	BoxOffice By Design Rectangular and Half-Moon Meeting Ro	oom		516
17	Bretford CR8500 Series Meeting Room Furniture			407
18	Office Supplies			4,137
19	Binders and Binder Accessories			1,400
20	Wilson Jones Hanging View Binder, White, 1"			585
21	Storex DuraTech Recycled Plastic Frosted Binders			412
22	Avery Flip-Chart Easel Binder, Black			403
23	🗏 Paper			1,379
24	Computer Printout Paper with Letter-Trim Perforations			502

 Nested fields/dimensions condensed into one column, with one filter option

Outline Form (recommended):

	А	В	С	D
1	Order Priority	(All)		
2	Region	(All)		
3				
4	Product Category	Product Sub-Category	Product Name	Sum of Order Quantity
5	🗏 Furniture			4,563
6		Bookcases		1,347
7			O'Sullivan 3-Shelf Heavy-Duty Bookcases	500
8			Bush Mission Pointe Library	442
9			O'Sullivan Elevations Bookcase, Cherry Finish	405
10		🖃 Chairs & Chairmats		1,674
11			Global High-Back Leather Tilter, Burgundy	666
12			Global Troy™ Executive Leather Low-Back Tilter	550
13			Office Star - Mid Back Dual function Ergonomic High	458
14		🖃 Tables		1,542
15			Bevis 36 x 72 Conference Tables	619
16			BoxOffice By Design Rectangular and Half-Moon Me	516
17			Bretford CR8500 Series Meeting Room Furniture	407
18	Office Supplies			4,137
19		Binders and Binder Access	pries	1,400
20			Wilson Jones Hanging View Binder, White, 1"	585
21			Storex DuraTech Recycled Plastic Frosted Binders	412
22			Avery Flip-Chart Easel Binder, Black	403
23		🗏 Paper		1,379
24			Computer Printout Paper with Letter-Trim Perforation	502
25			Xerox 210	473

- Each field/dimension broken out into its own column, with separate column headers and filter options
- Allows you to apply custom filters to each field (i.e. label filters on the **Product Category** field and value filters on the **Product Sub-Category** field)





Tabular Form (non-repeating):

2	Player	(All)	-]	
3					
4	Team	 Position 	-	Sum of Salary	Sum of Games
5	Anaheim Angels	Catcher		\$2,082,500	341
6		First Base	man	\$5,250,000	225
7		Outfielde	r	\$23,725,000	623
8		Pitcher		\$37,304,167	1307
9		Second Ba	aseman	\$2,270,000	109
10		Shortstop		\$1,150,000	146
11		Third Base	eman	\$7,250,000	83
12	Baltimore Orioles	Catcher		\$3,830,000	282
13		First Base	man	\$8,375,000	396
14		Outfielde	r	\$22,975,000	591
15		Pitcher		\$29,142,500	1478
16		Shortstop		\$2,850,000	398
17		Third Base	eman	\$6,705,000	197
18	Boston Red Sox	Catcher		\$5,505,000	246
19		First Base	man	\$3,250,000	259

Tabular Form (repeating):

2	Player	(AII)	Ŧ		
з					
4	Team 💌	Position	Ŧ	Sum of Salary	Sum of Games
5	Anaheim Angels	Catcher		\$2,082,500	341
6	Anaheim Angels	First Baseman		\$5,250,000	225
7	Anaheim Angels	Outfielder		\$23,725,000	623
8	Anaheim Angels	Pitcher		\$37,304,167	1307
9	Anaheim Angels	Second Basema	in	\$2,270,000	109
10	Anaheim Angels	Shortstop		\$1,150,000	146
11	Anaheim Angels	Third Baseman		\$7,250,000	83
12	Baltimore Orioles	Catcher		\$3,830,000	282
13	Baltimore Orioles	First Baseman		\$8,375,000	396
14	Baltimore Orioles	Outfielder		\$22,975,000	591
15	Baltimore Orioles	Pitcher		\$29,142,500	1478
16	Baltimore Orioles	Shortstop		\$2,850,000	398
17	Baltimore Orioles	Third Baseman		\$6,705,000	197
18	Boston Red Sox	Catcher		\$5,505,000	246
19	Boston Red Sox	First Baseman		\$3,250,000	259
20	Boston Red Sox	Outfielder		\$33,500,000	530
21	Boston Red Sox	Pitcher		\$40,109,000	1355



PRO TIP:

Use Outline Form when you are manipulating data within a Pivot, and switch to Tabular form with repeating labels (and no grand totals or subtotals) if you want to create a new raw dataset



CONDITIONAL FORMATTING

	ile Home	Insert P	age Layout	Formulas	Data F	Review View	Developer A	analytics Edge	Power Piv	vot Analyze	Design	🖓 Tell m
-	📙 👗 Cut	Calib	ri • 1	1 • A	A = = =	- »- P	Wrap Text	Currency	•		Nor	nal 2
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Ŧ	؇ Format P	ainter		<u> </u>			werge & center	\$ 70 -	.00 →.0	ormatting 👻 Ta	ible -	_
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H4	-	: x	∠ fr	1 41							it cells Rules	
			· J*							1 Tan/Ba	tem Bules	
	A	В	С	D	E	F		G		10	tom Rules	·
1	Symbol	AAPL 🖵	1									
2										<u>D</u> ata Ba	rs	·
3	Row Labels	Open Price	High Price	Low Price	Close Price	Daily Volume		Volume Tr	end			ng
4	8/21/2009	\$167.81	\$169.37	\$166.80	\$169.22	148,597				Color Sc	ales	·
5	8/24/2009	\$170.00	\$170.71	\$168.27	\$169.06	145,331						
6	8/25/2009	\$169.43	\$170.94	\$169.13	\$169.40	115,840				Icon Set	s	>
/	8/26/2009	\$168.94	\$169.55	\$166.76	\$167.41	108,570		_	-			
8	8/2//2009	\$168.59	\$169.57	\$164.83	\$169.45	160,421				New Rule		
9	8/28/2009	\$172.06	\$172.49	\$168.53	\$170.05	162,092	_			📑 <u>C</u> lear Rules		•
10	8/31/2009	\$168.09	\$168.85	\$166.50	\$168.21	111,264				Manage Ru	les	
11	9/1/2009	\$168.02	\$1/0.00	\$164.94	\$165.30	167,509					40.00	
12	9/2/2009	\$164.50	\$167.61	\$164.11	\$165.18	130,143					\$0.68	
13	9/3/2009	\$166.52	\$167.10	\$165.00	\$100.55	105,036					\$0.03	
14	9/4/2009	\$167.20	\$170.70	\$167.09	\$170.31	133,795					\$3.11	
15	9/9/2009	\$172.72	\$1/4.4/	\$109.70	\$171.14	289,746					-\$1.58	5
17	9/10/2009	\$172.03	\$173.25	\$170.81	\$172.50	175,404					\$0.53	
10	9/11/2009	\$172.90	\$1/3.18	\$170.87 \$170.25	\$172.10 \$172.72	124,028					-50.80	
10	9/14/2009	\$174.04 \$174.04	\$175.90	\$172 E0	\$175.72 \$175.16	152,003					\$2.87	
20	9/15/2009	\$179.00	\$193.05 \$193.75	\$173.39 \$177.99	\$1,5.10 \$191.97	132,310					\$1.12	
20	0/17/2009	\$170.00 \$191.00	\$186.70	\$191.00	\$194.55	205,295					\$3.67	

Conditional Formatting rules can be applied to PivotTables just like normal data ranges

(Home \rightarrow Conditional Formatting)

Options include:

- Text and Value-based Formats
- Data Bars
- Color Scales
- Icon Sets
- Formula-Based Rules



SORTING, FILTERING & GROUPING



SORTING & FILTERING



More Sort Options:

Sort (State)	? ×
Sort options	
🔘 <u>M</u> anual (you can drag items to rearra	ange them)
Ascending (A to Z) by:	
State	•
Descending (Z to A) by:	
Sum of Total Population	-
Summary	
Sort State by Sum of Total Population in	descending order
More Options OK	Cancel
	Cancer

Hit this button (or right-click one of the values) to drill into Sorting & Filtering options

Label Filters:

76	<u>C</u> lear Filter
	<u>E</u> quals
	Does <u>N</u> ot Equal
	Begins W <u>i</u> th
	Does No <u>t</u> Begin With
	Ends Wi <u>t</u> h
	Does Not End Wit <u>h</u>
	Cont <u>a</u> ins
	Does Not Contain
	<u>G</u> reater Than
	Greater Than Or Equal To
	Less Than
	Less Than Or Egual To
	Bet <u>w</u> een

Not Between...

Value Filters:

ĸ	<u>C</u> lear Filter
	<u>E</u> quals
	Does <u>N</u> ot Equal
	<u>G</u> reater Than
	Greater Than <u>O</u> r Equal To
	Less Than
	Less Than Or E <u>q</u> ual To
	Bet <u>w</u> een
	Not <u>B</u> etween
	<u>T</u> op 10



GROUPING DATA

	A		В		C
1	Year		2012	Ψ,	
2	Employee Name		(All)	-	
3					
4	Job Title	μ τ	Sum of Base P	ay	Sum of Overtime Pay
5	Fusion Welder		\$187,9	28	\$4,230
6	Forensic Autopsy Technic	an	\$73,8	399	\$530
7	Food Service Worker		\$832,0)14	\$236,773
8	Food Service Supervisor		\$120,5	515	\$12,307
9	Firefighter		\$15,547,8	896	\$3,740,214
10	Fire Safety Inspector li		\$249,9	959	\$1,854
11	Fire Safety Inspector 2		\$523,8	323	\$153,958
12	Fire Protection Engineer		\$77,3	376	\$0
13	Fire Fighter Paramedic		\$3,275,2	00	\$485,124
14	Fire Alarm Dispatcher		\$25,7	20	\$0
15	Fingerprint Technician li		\$94,2	78	\$6,587
16	Fingerprint Technician 3		\$65,8	894	\$998
17	Fingerprint Technician 2		\$172,5	95	\$9,040
18	Feasibility Analyst, Port		\$89,3	376	\$0
19	Farmer		\$61,6	525	\$0
20	Fare Inspections Supervise	or/Investigator	\$107,4	39	\$0
21	Fare Collections Receiver		\$228,8	800	\$46,455

Select values that you'd like to group

(in this case fire-related job titles)



Right-click and select Group

	A	В
1	Year	2012 .
2	Employee Name	(All)
3		
4	Job Title2	Job Title
5	Fusion Welder	
6		Fusion Welder
7	Forensic Autopsy Technician	
8		Forensic Autopsy Technician
9	Food Service Worker	
10		Food Service Worker
11	Food Service Supervisor	
12		Food Service Supervisor
13	🗏 Group1	
14		Firefighter
15		Fire Safety Inspector li
16		Fire Safety Inspector 2
17		Fire Protection Engineer
18		Fire Fighter Paramedic
19		Fire Alarm Dispatcher
20	🗏 Fingerprint Technician li	
21		Fingerprint Technician li

A new field is created ("Job Title2") containing the new group ("Group1")

Note: Both names can be customized



SLICERS & TIMELINES





REPORT FILTER PAGES

	A			В	С	D
1	Year		(All)	-		
2	Employee Name	Search		Q		
3		(Alb				
4	Job Title	2011			Sum of Overtime Pay	Sum of Other Pay
5	Account Clerk	- 2012			\$16,160	\$26,448
6	Accountant	2013			\$0	\$0
7	Accountant I				\$0	\$0
8	Accountant li				\$0	\$31,851
9	Accountant lii				\$0	\$9,318
10	Accountant Intern				\$0	\$6,715
11	Accountant Iv	Select Multiple Item	S		\$0	\$29,264
12	Acupuncturist				\$0	\$1,220
13	Admin Analyst 3	OK		Cancel	\$0	\$5,826
14	Admin Hearing Examiner			\$223,203	\$0	\$2,230
15	Administrative Analyst			\$4,439,753	\$140	\$18,873
16	Administrative Analyst I			\$5,416	\$0	\$0
17	Administrative Analyst Ii			\$118,747	\$0	\$4,247
18	Administrative Engineer			\$836,305	\$0	\$9,742
19	Administrative Services Mgr			\$183,985	\$0	\$470



Use the "Show Report Filter Pages" option to create new tabs for each value that a given filter (*i.e.* Year) can take

1	Teur	2011	3		
2	Employee Name	(NE)	-		
3					
4	Job Title	Sum of Ba	se Pay	Sum of Overtime Pay	Sum of Other Pay
5	Account Clerk	51	196,012	\$1,922	\$7,408
6	Accountant I	51	36,003	50	54
7	Accountant li	\$1,0	23,777	90	\$10,813
8	Accountant lik	\$1,4	00,111	50	\$2,600
9	Accountant Intern	52	58,020	50	\$4,468
10	Accountant ly	\$2	82,311	\$0	54
11	Administrative Analyst	\$1,2	17,674	50	\$9,025
12	Administrative Analyst I		\$5,410	50	50
13	Administrative Engineer	- 52	72,654	50	54
14	Administrative Services Mgr	51	81,965	50	\$470
15	Admission Attendant	51	70,300	\$21,599	510,343
16	Airport Communications Disp	52	33,654	551,120	515,683
17	Airport Communications Open	1 1	72,498	\$6,060	\$800
18	Airport Economic Planner	\$1	25,170	\$0	54
19	Airport Electrician	- 55	68,080	560,913	\$26,043
20	Airport Electrician Supervisor	51	07,193	\$26,802	\$12,664
21	Airport Operations Supervisor	- 52	46,005	\$11,288	\$2,783

	n .	14 J		U
	Year	2012 7		
ē	Employee Name	(AID =		
Ē				
Ľ,	Job Title	Sum of Base Pay	Sum of Overtime Pay	Sum of Other Pay
E	Account Clark	\$640,207	\$5,796	\$4,985
6	Accountant I	\$71,605	50	501
	Accountant E	\$561,379	50	\$15,394
	Accountant III	51,364,850	50	53,725
	Accountant Intern	\$185,458	50	\$1,040
ô	Accountant ly	\$207,783	50	501
1	Acupancharist	\$66,374	50	51,220
ž	Admin Analyst 3	\$95,336	50	\$5,826
3	Administrative Analyst	51,507,889	50	5048
ŧ,	Administrative Analyst 8	\$43,162	50	54,247
5	Administrative Engineer	\$101,107	50	\$4,087
ŝ	Administrator, Dph	\$230,840	50	541
ĩ	Administrator, Sheh Medical Center	\$245,524	50	\$12,000
8	Admission Attendant	\$86.077	53.687	\$7.080
ĵ,	Affirmative Action Specialist	\$03,569	50	50
ő.	Agricultural Inspector	\$48,788	50	501
ŝ	Airport Communications Disp	\$155.842	\$16.514	515.872

		0		
1	Year	2013 #		
2	Employee Name	(All) -		
6				
A	Job Title	- Sum of Base Pay	Sum of Overtime Pay	Sum of Other Pay
5	Account Clerk	\$973,666	57,442	\$14,055
6	Accountant	\$65,312	\$0	50
7	Accountant II	\$800,769	50	\$5,544
*	Accountant III	\$823,725	50	\$2,988
9	Accountant Intern	\$254,820	\$0	\$1,207
10	Accountant lu	5354,486	50	529,264
11	Admin Hoaring Examiner	\$223,203	50	\$2,230
12	Administrative Analyst	51,714,190	\$140	\$9,199
13	Administrative Analyst II	\$75,586	\$0	50
14	Administrative Engineer	\$360,342	\$0	54,806
15	Admission Attendant	5141,386	510,018	5273
16	Affirmative Action Specialist	\$76,776	50	50
17	Agricultural Impector	\$62,508	50	\$1,000
18	Airport Communications Disp	\$255,837	\$27,810	\$20,053
19	Airport Communications Operator	\$390,598	\$44,990	\$17,784
20	Airport Economic Playser	\$114,401	50	50
22	Airport Electrician	\$392,974	529,988	\$15,911

Year = **2012**

Year = **2013**



CALCULATED VALUES & FIELDS



SUMMARIZE VALUES BY



Summarize Values By determines how numbers should be treated when they are rolled up or aggregated (sum, count, average, max, etc.)

PRO TIP:

Excel will default to "Count Of" if a data column contains blanks or non-numerical values. Typically you will want to change this field setting to "Sum Of"



SHOW VALUES AS



Show Values As options allow you to apply additional calculations to change the way values are shown, such as the Percent of a Total or Subtotal, Running Value, Rank, etc.



In this case, we're showing **Order** Quantity values as % of Column Total, rather than whole numbers



SHOW VALUES AS - EXAMPLES

In this example we're summarizing the same Revenue field 6 different ways:

		Value (no calculation)	% of Total Column	% of Parent (genre)	% Difference (prev. year)	Running Total (by year)	Rank (Large → Small)
Genre 👎	Year 🖅	Revenue	Revenue2	Revenue3	Revenue4	Revenue5	Revenue6
Action		\$12,521,476,890	58.01%	100.00%			
	2010	\$2,939,932,519	13.62%	23.48%		\$2,939,932,519	4
	2011	\$3,326,029,678	15.41%	26.56%	13.13%	\$6,265,962,197	1
	2012	\$3,181,127,752	14.74%	25.41%	-4.36%	\$9,447,089,949	2
	2013	\$3,074,386,941	14.24%	24.55%	-3.36%	\$12,521,476,890	3
Adventure		\$8,130,146,101	37.67%	100.00%			
	2010	\$2,194,189,209	10.17%	26.99%		\$2,194,189,209	3
	2011	\$1,180,009,072	5.47%	14.51%	-46.22%	\$3,374,198,281	4
	2012	\$2,346,041,792	10.87%	28.86%	98.82%	\$5,720,240,073	2
	2013	\$2,409,906,028	11.16%	29.64%	2.72%	\$8,130,146,101	1
Animation		\$933,080,437	4.32%	100.00%			
	2010	\$251,501,645	1.17%	26.95%		\$251,501,645	2
	2011	\$10,134,754	0.05%	1.09%	-95.97%	\$261,636,399	4
	2012	\$183,600,836	0.85%	19.68%	1711.60%	\$445,237,235	3
	2013	\$487,843,202	2.26%	52.28%	165.71%	\$933,080,437	1
Grand Total		\$21,584,703,428	100.00%				



SHOW VALUES AS - INDEX

The **Index** calculation uses an aggregated weighted average to reveal the impact of one number within the context of a data set

Revenue	Country				
Genre 🏹	Australia	Canada	France	UK	USA
Action	\$843,261,855	\$718,355,657	\$1,076,178,688	\$3,099,974,501	\$59,778,470,770
Adventure	\$274,765,505	\$260,123,835	\$73,505,978	\$2,823,401,894	\$26,748,337,472
Animation	\$63,992,328		\$11,517,100	\$132,206,052	\$3,528,074,076
Biography	\$40,246,592	\$33,855,526	\$53,902,093	\$950,806,244	\$6,288,688,296
Comedy	\$77,873,417	\$231,856,600	\$159,028,092	\$980,270,042	\$35,675,230,901
Crime	\$2,300,604	\$1,882,581	\$8,478,574	\$366,995,069	\$7,485,361,502
Documentary		\$24,784	\$107,581,601	\$5,352,503	\$435,104,871
Drama	\$150,361,951	\$103,169,476	\$360,552,216	\$1,236,661,845	\$17,705,898,861
Family					\$447,481,433
Fantasy		\$123,792,202		\$14,564,027	\$1,257,990,540
Horror	\$49,460,140	\$101,747,280	\$3,658,281	\$195,236,323	\$4,729,877,904
Musical					\$184,168,000
Mystery	\$4,717,455	\$489,220	\$15,523,168		\$1,036,780,660

Each Revenue number is converted to an **Index** representing it's importance within each column, using the following formula:

(Cell Value * Grand Total) / (Row Total * Column Total)

Documentaries index very high in France, meaning that a global increase in Documentary ticket prices would impact the French film industry significantly more than any other country

Revenue	Country 🖵				
Genre	Australia	Canada	France	UK	USA
Action	1.54	1.25	1.58	0.87	0.99
Adventure	1.09	0.99	0.23	1.72	0.97
Animation	2.05	0.00	0.30	0.65	1.03
Biography	0.65	0.53	0.70	2.37	0.93
Comedy	0.25	0.71	0.41	0.48	1.05
Crime	0.03	0.03	0.10	0.86	1.04
Documentary	0.00	0.01	18.90	0.18	0.86
Drama	0.92	0.60	1.78	1.16	0.99
Family	0.00	0.00	0.00	0.00	1.09
Fantasy	0.00	10.13	0.00	0.19	0.98
Horror	1.16	2.29	0.07	0.71	1.01
Musical	0.00	0.00	0.00	0.00	1.09
Mystery	0.53	0.05	1.41	0.00	1.07



CALCULATED FIELDS

Calculated Fields allow you to create new measures based on existing, numerical fields:

Pivo	tTable Tool:	s		Insert Calculated Field
Analy	ze Desi	ign ♀ Tell me	what you want to do	Name: % Students
inge Data	Clear S	Gelect Move PivotTable	Image: fxImage: fxImage: fxImage: fxFields, Items, & Sets \neg OLAP Relationships Tools \neg PivotChar	rt Eields:
a		Actions	Calculated <u>Field</u>	Total Population Student Population
F	G	Н	Solve Order	Insert Fig.
			Create Set Based on <u>R</u> ow Items Create Set Based on <u>C</u> olumn Items Manage Sets	ОК СІоз

ts. equal to Student Population / Total Population



PRO TIP:

Don't calculate rate metrics (i.e. CTR, CPC) in your raw data, use calculated fields in your Pivot. This ensures that they calculate properly no matter how your data is rolled up



CALCULATING USING COUNTS

Calculated fields are *always* based on the SUM of other fields (*even if they are shown as a count, max, average, etc.*). But what if you want to make a calculation based on the COUNT of a field?

Ex) Create a field to calculate the *Likes per Post* on each date

	C	A B	4
		Page Spartan Race 3	1
		ost Type photo 🛪	2
Ļ			3
	Sum of Likes	Date of Post 🛛 Post Copy 🖓	4
	2,286	⊟ 10/1/2016	5
	336	If you missed the #SpartanWC16, you missed	6
	218	Tap that bell then celebrate with a refreshing	7
	604	The biggest race of the Spartan calendar is h	8
	1,128	Your 2016 #SpartanWC16 top finishers: Zuza	9
	7,266	⊟ 10/2/2016	10
	534	"Couldn't wait to get home and put it all tog	11
	1,467	#SpartanRace founder practicing what he pr	12
	2,000	Tahoe had one last surprise for us Spartans t	13
	1,743	The 26+ mile, 70+ obstacle #SpartanWC16 U	14
	572	This #SpartanMedal is one for the mantle! P	15
	663	Your top finishers at this year's #SpartanWC:	16
	287	Your top finishers at this year's #SpartanWC:	17
	12,022	⊟ 10/3/2016	18
	749	AROO to all the racers, fans and volunteers t	19
	: 1,079	As the sun sets on another World Champion:	20
	865	Cold, mud, obstacles and snow could not stc	21
	963	How many Spartans out there are feeling so	22
	2,926	Start the week off strong, and keep it going a	23
	5,440	When Randy Moss, one of the greatest footh	24

STEP 1: Create a new "**Count**" column (=1) in the source data

	Α	В	C	
1	Count	Page	Date of Post	Pos
2	1	Spartan Race	8/30/2016	vi
3	1	Spartan Race	8/30/2016	vi
4	1	Spartan Race	8/30/2016	vi
5	1	Spartan Race	8/30/2016	vi
6	1	Spartan Race	8/30/2016	vi
7	1	Spartan Race	8/31/2016	vi
8	1	Spartan Race	8/31/2016	vi
9	1	Spartan Race	8/31/2016	1
10	1	Spartan Race	8/31/2016	pł
11	1	Spartan Race	8/31/2016	vi
12	1	Spartan Race	8/31/2016	st
13	1	Spartan Race	8/31/2016	st
14	1	Spartan Race	8/31/2016	st
15	1	Spartan Race	8/31/2016	st
16	1	Spartan Race	8/31/2016	st
17	1	Spartan Race	9/1/2016	1
18	1	Spartan Race	9/1/2016	vi
19	1	Spartan Race	9/1/2016	1
20	1	Spartan Race	9/1/2016	vi
21	1	Spartan Race	9/1/2016	vi

STEP 2: Create a calculated field defined as Likes/Count

Ins	sert Calcu	ulate	d F	ield								
Name: Likes/Post												
Formula: = Likes/ Count												
				-								
4	Date of Po	ost	₹,	Post Copy	₹,	Sum of Likes	Sum of Likes/Post					
5	= 10	/1/20)16			2,286	572					
6				If you missed the #SpartanWC	:16,	336	336					
7				Tap that bell then celebrate w	ith	218	218					
8				The biggest race of the Sparta	n ca	604	604					
9				Your 2016 #SpartanWC16 top	fini	1,128	1,128					
10	= 10	/2/20)16			7,266	1,038					
11				"Couldn't wait to get home an	id p	534	534					
12				#SpartanRace founder practic	ing	1,467	1,467					
13				Tahoe had one last surprise for	or us	2,000	2,000					
14				The 26+ mile, 70+ obstacle #S	part	1,743	1,743					
15				This #SpartanMedal is one for	the	572	572					
16				Your top finishers at this year'	s #S	663	663					
17				Your top finishers at this year'	s #S	287	287					



CALCULATED ITEMS

Calculated Items allow you to create new dimensions or categories based on existing dimensions:





PRO TIP:

DON'T USE CALCULATED ITEMS UNLESS YOU NEED TO; you're usually better off simply grouping fields or adding new category columns within your source data itself



SOLVE ORDER



If you've defined multiple calculated items, the Solve Order can be used to determine which calculations to prioritize (value is determined by the last formula in the list)



LIST FORMULAS



The List Formulas tool produces a new tab summarizing all calculated fields and items associated with a given Pivot, along with the current solve order



PIVOT CHARTS



PIVOT CHART 101

A **PivotChart** is simply a chart that is tied to a specific PivotTable; as you adjust filters and fields in your Pivot, the PivotChart updates dynamically



2) Select a chart type

3) The PivotChart will be inserted, and dynamically tied to the pivot (**note:** you can filter the view using either the pivot table or the chart itself)



PIVOT CHART OPTIONS

The "Analyze" Tab:

Excel_PivotTable_Exercises_WIP_v2 - Excel								PivotChart Tools				Christopher Dutton			itton	Ā	—	đ	×						
File Ho	me Insert I	Page Layo	ut f	Formulas	Data	Review	View	Develop	er Analyti	tics Edge	Power F	Pivot	Analyze	Design	Format	🔉 Tel	l me wha	you want to do						R₁ si	nare
Chart Name: Chart 2	Active Field:	Drill s Down	↑ Drill Up *	* Expand F	Field Field	Insert Slicer Ti	Insert imeline Cor	Filter	Refresh Char	inge Data	Clear M	dove Chart	Fields, Items & Sets -	f _x OLAP Tools -	Relationships	Field List	Field Buttons	Ŧ							
PivotChart		Active	Field				Filter		Data	а	Action	ns		Calculation	IS	Sh	ow/Hide								^

The "Design" Tab:

🖬 🔊 🖑				Excel_PivotTable_Exercises_WIP_v2 - Excel						PivotChart Tools								\times
File Home	Insert	Page Layout	Formulas	Data Review	v View	Developer	Analytics Edge	Power Pivot	Analyze	Design	Format	🖓 Tell m	e what you w	ant to do			R₁ sr	hare
Add Chart Quick	Change										Switch Ro	v/ Select	Change	Move				
Chart Layouts	COIDID				Cł	art Styles					Da	ta	Туре	Location				~

The "Format" Tab:

Excel_PivotTable_Exercises_WIP_v2 - Excel								ivotChart Too		Christopher Dutton 📧 —			
File Home Ins	ert Page Layout Fo	ormulas Dat	ta Review	View Devel	loper Analytics Edge	Power Pivot	Analyze	Design	Format	${ig Q}$ Tell me what you want	to do		A₁ Share
Chart Area Selection Reset to Match Style	Change Change Shape *	Abc	Abc Abc	Abc	Abc Abc Abc	 Shape F Shape C Shape E 	ill * Outline * ffects *	А	A	A Text Fill * A Text Outline * A Text Effects *	Bring Forward ~ Image: Align Send Backward ~ Image: Group Selection Pane Image: Align	P → P → te → Width: 3.57" ↓ 7.58" ↓ 2.57" ↓ 2	
Current Selection	Insert Shapes			Shape	e Styles		G		WordA	Int Styles 🛛	Arrange	Size 54	^



PIVOT CHART LAYOUTS & STYLES



Chart Layouts & Styles allow you to adjust the look and feel of a PivotChart, including adding elements, changing color palettes, or applying pre-set templates



PIVOT CHART FIELD BUTTONS





Select **PivotChart Tools** → **Analyze** → **Field Buttons** to hide them from the chart (or right click one of them from the chart itself)

Field Buttons allow you to apply or adjust filters directly within the chart



PRO TIP:

You can format PivotCharts exactly like normal Excel charts – the only difference is that PivotCharts are dynamically tied to a PivotTable



ADDING SLICERS

A **Slicer** is basically a "prettier" version of a PivotTable filter; it works exactly the same way by filtering the data you see in your PivotTable and PivotCharts



3) The Slicer will be inserted next to your table, allowing you to filter on specific values (or combinations, using the **CTRL** key)



2) Select the field(s) that you want to filter

ADDING TIMELINES

A **Timeline** works just like a Slicer – it's just formatted to work specifically with Date & Time fields



2) Select the date/time field(s) that you want to filter

3) The Timeline is inserted, allowing you to filter on specific time frames (**Note:** may need to adjust unit of time (month, year, etc.))

